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| Name: Jennifer Meadows Date: 2-17-15 Lesson Title: Divide and Conquer  Grade Level: 3  Length of Lesson: 65-80 minutes | | |
| **Standards** | | |
| 3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8*.  MP1: Make sense of problems and persevere in solving them.  MP2: Reason abstractly and qualitatively.  MP3: Construct viable arguments and critique the reasoning of others.  MP4: Model with mathematics.  MP5: Use appropriate tools strategically.  MP6: Attend to precision.  MP7: Look for and make use of structure. | | |
| **Central Focus of Unit/Learning Segment** | | |
| Central Focus: Represent and solve problems involving multiplication and division  Lesson 1: Interpret products of whole numbers  Lesson 2: **Interpret whole-number quotients of whole numbers using the measurement model (Divide and Conquer)**  Lesson 3: Interpret whole-number quotients of whole numbers using the partition model | | |
| **Essential Understandings** | | **Essential Questions** |
| * Multiplication and division are inverses; they undo each other. * Multiplication is commutative, but division is not. * Division can be demonstrated using measurement (repeated subtraction) and partition (fair-sharing). [Partitioning is addressed in the next lesson] * Students use mathematical reasoning, models, and equations to manipulate practical applications and to solve problems. | | * How are multiplication and division alike? * How are multiplication and division different? * In what ways can division be represented? * How do you solve problems using multiplication or division in real world situations? |
| **Lesson Objectives** | | |
| 1. TLW model the measurement (repeated subtraction) concept of division using counters and cups (or drawings). 2. TLW create equations to demonstrate the connection between the measurement concept of division to multiplication and addition. 3. TLW write story problems to represent equations demonstrating the measurement concept of division. 4. TLW create examples to demonstrate their understanding of content/academic vocabulary. | | |
| **Language Demands** | | |
| **Language Function & Key Learning Task**  Language Function: **Model**  Key Learning Task: Students will **model** how many sets of 4 you can make using 31 counters and by creating an equation. Students will **model** how many sets of 6 you can make using 27 counters and by creating an equation.  **Content/Academic Vocabulary**   |  |  |  | | --- | --- | --- | | **Word** | **Definition** | **Examples** | | commutative property | property states that numbers can be added or multiplied in any order | 2 + 3 = 3 + 2  4 x 7 = 7 x 4 | | dividend | an amount being divided | 12 ÷ 3 = 4; 12 is the dividend | | divisor | a number that divides into the dividend (also know as factor) | 12 ÷ 3 = 4; 3 is the divisor | | equation | a number sentence stating that the expressions on either side of the equal sign are in fact equal | All of the following are examples of equations:  4 x 8 = 30 + 2 9n = 81  50 ÷ 5 = 10 2 + 2 = 8 – 4 | | inverse | an operation that reverses the effect of another operation | Addition & Subtraction  7 + 3 = 10  10 – 3 = 7  Multiplication & Division  6 x 2 = 12  12 ÷ 2 = 6 | | model | a mathematical representation for real world or mathematical objects, properties, actions, or relationships | Paul picked 38 strawberries. He plans to sell them in baskets of 12 at the market. How many baskets will he need? How many strawberries will he have left over to eat for a snack?  38 ÷ 12 = 3  with a remainder of 3  Both the picture and the equation are examples of mathematical models for the given situation. | | partitioning | separating into equal parts | 12 can be partitioned into 3 equal groups of 4 | | quotient | the answer to a division problem | 12 ÷ 3 = 4; 4 is the quotient | | remainder | an amount left over after dividing a number | 22 ÷ 3 = 7 with a remainder of 1 |   **Discourse & Syntax**   |  |  |  | | --- | --- | --- | | **Activity** | **Discourse** – creating and sharing knowledge | **Syntax** – correctly using a set of conventions for organizing words, phrases, and symbols together into structures | | Students will partner read the definitions and examples of content/academic vocabulary | ✔ | ✔ | | Students will create their own examples of the content/academic vocabulary in their notebooks | ✔ | ✔ | | Students will explain their thinking processes and question others about their thinking processes during partner work with the situation: how many sets of 3 can be made from 13 items. | ✔ |  | | Students will discuss and critique each other’s reasoning during the partner and whole group activity for the situations: how many sets of 4 can be made from 31 items and how many sets of 6 can be made from 27 items. | ✔ |  | | Students will create an example for each content/academic vocabulary word | ✔ | ✔ | | Students will model the following situation with a drawing and equations: 7 items in groups of 2 | ✔ | ✔ | | Students will write a story problem to represent an equation demonstrating the measurement concept of division | ✔ | ✔ | | Students and the teacher will refer to the anchor chart throughout the lesson for the content/academic vocabulary pointing out the correct syntax used in the examples. |  | ✔ | | Students will model the following situation with a drawing and equations: 7 items in groups of 2 |  | ✔ |   **Supports**   * Physical supports used to encourage discourse and syntax provided during the lesson include: content/academic vocabulary anchor chart, student math notebooks, counters & cups, and dry erase board & markers. * Students will have opportunities to model problems, discuss, and write about their work using the dry erase board & markers as well as their math notebooks. * The teacher and students will work together in the introductory activity to demonstrate how to use the measurement model for division to model the mathematics with drawings and equations. * The teacher and students will work together in the introductory activity to create story problems to match a situation in which someone might have 13 things and wants to find out how many sets of 3. * The teacher will be modeling the correct use of each of the Content/Academic Vocabulary and the language function throughout the lesson while also monitoring for correct student use of the words in their discussions. * During student discussions, the teacher will ask probing questions to elicit the use of the Content/Academic Vocabulary as well as the language function, model. * Students who are struggling to learn the new vocabulary will be paired with students who can offer support and encouragement during the discussions. | | |
| **Materials/Resources** | | |
| **Teacher**   * Content/academic vocabulary anchor chart * Dry erase board * Dry erase marker * 35 counters * Small paper cups or portion cups * Document camera * Projector | **Students**   * Math notebooks * Content/academic vocabulary table glue-in (see attached) * 35 counters * Small paper cups or portion cups that will hold at least 6 counters * Dry erase board * Dry erase marker * Eraser or cloth for dry erase board | |
| **References** | | |
| * Georgia Department of Education. 2014. Common Core Georgia Performance Standards Framework, Third Grade Mathematics: Unit 2. <https://www.georgiastandards.org/Common-Core/Common%20Core%20Frameworks/CCGPS_Math_3_Unit2Framework.pdf> * Hands-On Standards, Deluxe Edition Grade 1-2, Teacher Resource Guide with Assessments Book <http://www.hand2mind.com/brands/handsonstandards/hands-onstandardsdeluxeedition> * Kagan, S. & Kagan, M. 2009. Kagan cooperative learning. *Kagan Publishing*. * Kansas Association of Mathematics Teachers. 2014. 3rd Grade Common Core State Standards Flipbook <http://www.katm.org/flipbooks/3%20FlipBook%20Final%20CCSS%202014.pdf> * Public Schools of North Carolina. Lessons for Learning for the Common Core State Standards for Math: Grade 3 <http://maccss.ncdpi.wikispaces.net/file/view/CCSSMathTasks-Grade3.pdf> * Van de Walle, Karp, & Bay-Williams. 2016. Expanded lesson: Divide and conquer. *Pearson Education*. * Vygotsky, L.S. (1978). Mind in society. The development of higher psychological processes. Cambridge, MA: Harvard University Press. | | |

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| **Adaptations to Meet Individual Needs** |
| Preselected partners will be chosen based on student ability as determined by benchmark testing and teacher anecdotal records. Most students will be partnered with another student from an adjacent ability group as recommended by Kagan (2009). They will also be based on student personalities to allow for beneficial social interaction with minimal behavioral issues.  High-Level Learners: As the teacher is monitoring both partner and individual work, questions will be tailored to a higher-level of Bloom’s taxonomy and may include higher values of numbers for these learners as needed. Challenge early finishers to see if they can create equations and write a story problem for 125 things in sets of 20 without using counters.  On-Level Learners: This lesson plan is structured for on-level learners as written.  Struggling Learners: As the teacher is monitoring both partner and individual work, questions will be tailored to an appropriate level of Bloom’s taxonomy and may included lower values of numbers for these learners as needed while still providing challenge at their Zone of Proximal Development (ZPD). If some students struggle with writing, support them by allowing drawings instead of written story problems. Initially during the main activity, if some students are struggling, you may need to start them by supporting them in the placement of the correct amount counters in the first cup. Then they should be able to use that model to continue. Students who are struggling to learn the new vocabulary will be paired with students who can offer support and encouragement during the discussions.  English Language Learner: Provide additional support as needed for vocabulary through the use of a peer tutor and/or picture cues. Students who are struggling to learn the new vocabulary will be paired with students who can offer support and encouragement during the discussions. If some students struggle with writing, support them by allowing drawings instead of written story problems. Initially during the main activity, if some students are struggling, you may need to start them by supporting them in the placement of the correct amount counters in the first cup. Then they should be able to use that model to continue. |
| **Management/Safety Issues** |
| * Students should follow all previously established classroom rules. * Students will be responsible for returning all manipulatives to the bags that they came in after they are finished using them. * Anytime the teacher needs student attention, the teacher will say “Divide” to which the students will reply “ And Conquer”. * When working with partners, students will be reminded and monitored for staying on task. |
| **Rationale/Theoretical Reasoning** |
| **Rationale**  This standard focuses on two distinct models of division: partition models and measurement (repeated subtraction) models. Partition models focus on the question, “How many in each group?” A context for partition models would be: There are 12 cookies on the counter. If you are sharing the cookies equally among three bags, how many cookies will go in each bag? Measurement (repeated subtraction) models focus on the question, “How many groups can you make?” A context or measurement models would be: There are 12 cookies on the counter. If you put 3 cookies in each bag, how many bags will you fill? Students need to recognize the operation of division in two different types of situations. One situation requires determining how many groups and the other situation requires sharing (determining how many in each group).  To develop this understanding, students interpret a problem situation requiring division using pictures, objects, words, numbers, and equations. Given a division expression (e.g., 24 ÷ 6) students interpret the expression in contexts that require both interpretations of division.  (Kansas Association of Mathematics Teachers. 2014. 3rdd Grade Common Core State  Standards Flipbook <http://www.katm.org/flipbooks/3%20FlipBook%20Final%20CCSS%202014.pdf>)  (Van de Walle, Karp, & Bay-Williams, 2016)  **Theory**   * The purpose of teaching through a concrete-to-representational-to-abstract sequence of instruction is to ensure students truly have a thorough understanding of the math concepts/skills they are learning. When students who have math learning problems are allowed to first develop a concrete understanding of the math concept/skill, then they are much more likely to perform that math skill and truly understand math concepts at the abstract level. (Hands-On Standards, Deluxe Edition Grade 1-2, Teacher Resource Guide with Assessments Book http://www.hand2mind.com/brands/handsonstandards/hands-onstandardsdeluxeedition) * Students are provided an opportunity to socially construct knowledge while working with their peers. They also have the opportunity to work in their zone of proximal development as determined by benchmark testing and grade level standards. (Van de Walle, Karp, & Bay-Williams, 2016) * Choosing partners with adjacent ability levels provides for a heterogeneous grouping while avoiding frustration on the part of either student. This is opposed to a partnership with significant differences in ability levels often resulting in conflict. (Kagan, S. & Kagan, M. 2009. Kagan cooperative learning. *Kagan Publishing*.)   **Common Misconceptions or Difficulties**   * Students may have difficulty seeing multiplication and division as inverse operations. In order to develop an understanding of this relationship, students need to have ample opportunities to explore these two operations simultaneously. * The three ways of looking at division (separating into equal groups, repeated subtraction, and inverse of multiplication) are closely related and may be difficult for students to verbalize initially as they make connections between concrete models and their corresponding number sentences. Therefore, students need multiple experiences using a given number of cubes to model repeated subtraction, form equal groups, and explain how these two activities are alike and different. They also need to understand the inverse relationship of multiplication and division. Help students make connections to the language of mathematics and between visual and symbolic representations.   (<https://www.georgiastandards.org/Common-Core/Common%20Core%20Frameworks/CCGPS_Math_3_Unit2Framework.pdf>) |

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| **Assessment/Evaluation Criteria** |
| **Formative Assessment**   * Observe for evidence that students see the connection between the action of finding how many equal sets in a given quantity. (Correct modeling with counters and cups) * Observe for evidence that students see the manner in which a multiplication equation and a division equation are connected. (Correct equations on dry erase boards) * Listen that story problems indicate the action of measuring equal sets of 4 rather than dividing the quantity into four sets in a process of sharing or partitioning. If students make this error, simply have them discuss whether or not the story fits well with the action. Do not indicate that the story is incorrect. It is also possible that students will create multiplication stories with 31 being the unknown amount. Here, ask students which equation best represents the problem.   **Summative Assessment**  Assessment Tool: Student Math Notebook (See Rubric Attached)   * [Objective 4: TLW create examples to demonstrate their understanding of content/academic vocabulary] Students should work individually to complete the final column in their content/academic vocabulary glue-in in their math notebooks. They should add a new example for each word in the table. Mastery = 3/4 * [Objectives 1-3: TLW model the measurement (repeated subtraction) concept of division using counters and cups (or drawings); TLW create equations to demonstrate the connection between the measurement concept of division to multiplication and addition; TLW write story problems to represent an equation demonstrating the measurement concept of division.] Students should model the following situation with a drawing and equations: 7 items in groups of 2. Students should write a story problem to represent an equation demonstrating the measurement concept of division. Mastery = 3/4   All objectives will also be assessed later at the end of the unit with situations similar to those in this lesson.  **Academic Feedback** (See anecdotal note recording sheet attached)  I will closely monitor and take notes throughout the lesson including the individual and partner work. I will be looking at use of manipulatives and at the written responses. I will also be listening to discussions and questions carefully. This information will provide me with evidence used in determining which questions to ask to specific students during the lesson to assess and advance their learning. I will also encourage students that are being successful on their tasks to help others be successful as well by asking questions along the way. I will talk to students about their manipulative use, language use, and their written work throughout the lesson. I will document student learning progress through anecdotal notes throughout the lesson and use this information when choosing students to present information and for questioning during the whole group time. I will write directly on student math notebooks and return them to students during center time conferences. Student math notebooks will be sent to parents in the weekly folder to review with their children. |

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| **Instruction** | **Higher-Order Thinking Questions** |
| **Set/Hook/Motivator (Before)**  As a bell ringer activity, students will paste the content/academic vocabulary table in their math notebooks. They will be expected to read the words, definitions, and examples with a partner. (This occurs at the beginning of the day while the teacher takes attendance and collects notes, homework, money, etc.)  **Begin with a simpler version of the task (10-15 minutes):**   * Draw 13 counters (dots) on the board. Ask, “How many sets of 3 can we make if we have 13? * How many will be left over?” Most students should be able to answer this question mentally.   + use wait time   + turn and talk with partners   + listen as students are sharing   + choose students to share that are able to demonstrate how to verify the answer of four sets of 3 and 1 left   (Note: Depending on student readiness, you may want to precede the first step using a number such as 12 so that there are no remainders. Do not wait too long before remainders are addressed.)   * Ask, “What equation could we write for what we have on the board?” Use wait time before accepting students’ ideas and writing them on the board.   Correct ideas include:   * 3 + 3 + 3 + 3 + 1 = 13 * 4 × 3 + 1 = 13 (3 × 4 + 1 technically represents three sets of 4 and 1 more.) * 13 ÷ 3 = 4 with 1 left over * Discuss the connection between these equations and the operations:   + pose the question to the group   + use wait time   + turn and talk with partners   + listen as students are sharing   + choose students to share that noticed the inverse relationships between addition/subtraction and multiplication/division. * Explain that what the students just worked on was called modeling. They modeled the situation with 13 items in sets of 4 both with dots and an equation. * Allow time for discussion from students about their experiences with modeling. * Say, “Think of a situation in which someone might have 13 things and wants to find out how many sets of 3. Make up a story problem about your situation.” * After some wait time, have 2-3 students share their story problems.   **Present the focus task to the class (5 minutes):**   * Distribute small paper cups or portion cups and counters to students. Pose the two problems: * Use 31 counters to see how many sets of 4 you can make. * Use 27 counters to find out how many sets of 6 you can make. * Ask students for ideas of how they might use the cups to help them solve the problems.   **Provide clear expectations (5 minutes):**   * Instruct students to work with pre-assigned partners. * Write the directions on the board:  1. Model how many sets of 4 you can make using 31 counters. 2. Write three equations: one addition, one multiplication, and one division. (on partner 1’s dry erase board) 3. Write a story problem to go with the division equation. (on partner 1’s dry erase board) 4. Repeat steps 1, 2, and 3 using 27 counters to make sets of 6. (on partner 2’s dry erase board) | * How many sets of 3 can we make if we have 13? * How many will be left over? * What equation could we write for what we have on the board? * How are these equations related? * Which of these operations are opposites or inverses? * What is modeling? * What are some other contexts in which you have heard the word “modeling”? * Think of a situation in which someone might have 13 things and wants to find out how many sets of 3. Make up a story problem about your situation. * Use 31 counters to see how many sets of 4 you can make. * Use 27 counters to find out how many sets of 6 you can make. * How might you use the cups to help solve these problems? * Model how many sets of 4 you can make using 31 counters. * Write three equations: one addition, one multiplication, and one division. * Write a story problem to go with the division equation. * Model how many sets of 6 you can make using 27 counters. * Write three equations: one addition, one multiplication, and one division. * Write a story problem to go with the division equation. |
| **Instructional Procedures (During)**  **Initially (5 minutes):**   * Observe that each student understands the task and is in the process of attempting to solve the first situation. * If you find that some students, particularly those with disabilities, are struggling, you may need to start them by supporting them in the placement of 4 counters in the first cup. Then they should be able to use that model to continue. * If some students struggle with writing, support them by allowing drawings instead.   **Ongoing (15 minutes):**   * Ask students to explain and show on their dry erase boards why their equations go with what they modeled with the counters. * Do not correct incorrect equations or story problems. You only want to be sure students are attempting to connect the activity with the symbolism and the stories. * Make anecdotal notes as students are working. Monitor their success with each objective, while also noting students to present their work during the closure. * Challenge early finishers to see if they can do the same thing for 125 things in sets of 20. However, they will have to figure it out without using counters. | * What are you asked to do in this task? * What can you relate from 13 dots activity to the task you are currently working? * If we place 4 counters in the first cup, what would the next step be for this problem? * Explain and show on your dry erase board why your equation goes with the model you created with the counters. * How does your equation relate to multiplication? * If you had 125 items in sets of 20, how may complete sets would you have? How many left overs? * Create a story problem that would apply to 125 items in sets of 20. |
| **Closure (After)**  **Bring the class together to share and discuss the task (15-20 minutes):**  (Throughout discussion, look for opportunities to encourage students to use the content/academic vocabulary correctly.)   * Have students (chosen during student work time) to show how they know how many sets of 4 can be made with 31 counters.   + A picture may be drawn on the board or use counters on the document camera with a projector. * Have students (chosen during student work time) share their equations.   + Students should explain how their equations match what was done with the counters. If students disagree, have them respectfully explain their reasoning. Students should be comfortable with their ideas about the multiplication and addition equations. Because this is an introductory lesson on division, you should correct any misunderstandings about the division equation and what it means. * Have students (chosen during student work time) to share their story problems.   + Students should explain how the story situation matches the action of finding how many sets of 4 are in 31. For example: “There were 31 apples in the basket. If each apple tart requires 4 apples, how many tarts can be made?” * Repeat with the 27 ÷ 6 situation.   **Individual Assessment (10-15 minutes):**   * Students should work individually to complete the final column in their content/academic vocabulary glue-in in their math notebooks. They should add a new example for each word in the table. * Students should model the following situation with a drawing and equations: 7 items in groups of 2. * Students should write a story problem to represent an equation demonstrating the measurement concept of division. * As students finish, they will have the choice of continuing practice on this topic through the following web-based resources:   + <http://www.ixl.com/math/grade-3/division-word-problems-facts-to-10>   + <http://www.ixl.com/math/grade-3/complete-the-division-table>   + <http://illuminations.nctm.org/Activity.aspx?id=4213>   + <http://www.oswego.org/ocsd-web/games/SumSense/summulti.html> | * How many sets of 4 can be made with 31 counters? * What is an equation that can represent this problem? * How do you know that your equation matches this situation? * What is a story problem that matches the action of finding how many sets of 4 are in 31? * What is another story problem that matches the action of finding how many sets of 4 are in 31? * How many sets of 6 can be made with 27 counters? * What is an equation that can represent this problem? * How do you know that your equation matches this situation? * What is a story problem that matches the action of finding how many sets of 6 are in 27? * What is another story problem that matches the action of finding how many sets of 6 are in 27? * Create a new example for each of the content/academic vocabulary words in your notebook. * In your math notebook, model the following situation with a drawing and equations: 14 items in groups of 4. * In your notebook, write a story problem to represent an equation demonstrating the measurement concept of division. |

Content/Academic Vocabulary Glue-In

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| **Word** | **Definition** | **Examples** | |
| model | a mathematical representation for real world or mathematical objects, properties, actions, or relationships | Paul picked 38 strawberries. He plans to sell them in baskets of 12 at the market. How many baskets will he need? How many strawberries will he have left over to eat for a snack?  38 ÷ 12 = 3  with a remainder of 3  Both the picture and the equation are examples of mathematical models for the given situation. | |
| commutative property | property states that numbers can be added or multiplied in any order | 2 + 3 = 3 + 2  4 x 7 = 7 x 4 |  |
| dividend | an amount being divided | 12 ÷ 3 = 4; 12 is the dividend |  |
| divisor | a number that divides into the dividend (also know as factor) | 12 ÷ 3 = 4; 3 is the divisor |  |
| equation | a number sentence stating that the expressions on either side of the equal sign are in fact equal | All of the following are examples of equations:  4 x 8 = 30 + 2 9n = 81  50 ÷ 5 = 10 2 + 2 = 8 – 4 |  |
| inverse | an operation that reverses the effect of another operation | Addition & Subtraction  7 + 3 = 10  10 – 3 = 7  Multiplication & Division  6 x 2 = 12  12 ÷ 2 = 6 |  |
| partitioning | separating into equal parts | 12 can be partitioned into 3 equal groups of 4 |  |
| quotient | the answer to a division problem | 12 ÷ 3 = 4; 4 is the quotient |  |
| remainder | an amount left over after dividing a number | 22 ÷ 3 = 7 with a remainder of 1 |  |

Scoring Rubric for Summative Assessments

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|  | **1**  **Unsatisfactory: Little Accomplishment** | **2**  **Marginal: Partial Accomplishment** | **3**  **Proficient: Substantial Accomplishment** | **4**  **Excellent: Full Accomplishment** | **Score** |
| **Examples of content/Academic Vocabulary** | The task is attempted and some mathematical effort is made. There may be fragments of accomplishment but little or no success. | Part of the task is accomplished, but there is lack of evidence of understanding or evidence of not understanding. Direct input or further teaching is required. | Could work to full accomplishment with minimal feedback. Errors are minor, so teacher is confident that understanding is adequate to accomplish the objective. | Strategy and execution meet the content, processes, and qualitative demands of the task. Communication is judged by effectiveness, not length. May have minor errors. |  |
| **Model: drawing** | The task is attempted and some mathematical effort is made. There may be fragments of accomplishment but little or no success. | Part of the task is accomplished, but there is lack of evidence of understanding or evidence of not understanding. Direct input or further teaching is required. | Could work to full accomplishment with minimal feedback. Errors are minor, so teacher is confident that understanding is adequate to accomplish the objective. | Strategy and execution meet the content, processes, and qualitative demands of the task. Communication is judged by effectiveness, not length. May have minor errors. |  |
| **Model: equations** | The task is attempted and some mathematical effort is made. There may be fragments of accomplishment but little or no success. | Part of the task is accomplished, but there is lack of evidence of understanding or evidence of not understanding. Direct input or further teaching is required. | Could work to full accomplishment with minimal feedback. Errors are minor, so teacher is confident that understanding is adequate to accomplish the objective. | Strategy and execution meet the content, processes, and qualitative demands of the task. Communication is judged by effectiveness, not length. May have minor errors. |  |
| **Story Problem: representing an equation demonstrating the measurement concept of division** | The task is attempted and some mathematical effort is made. There may be fragments of accomplishment but little or no success. | Part of the task is accomplished, but there is lack of evidence of understanding or evidence of not understanding. Direct input or further teaching is required. | Could work to full accomplishment with minimal feedback. Errors are minor, so teacher is confident that understanding is adequate to accomplish the objective. | Strategy and execution meet the content, processes, and qualitative demands of the task. Communication is judged by effectiveness, not length. May have minor errors. |  |

Anecdotal Recording Sheet

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| **Level of Understanding** | **Name of Student**  **(Post sticky notes in boxes. Move and revise without having to erase form.)** |
| **Above and Beyond**  Clear understanding.  Communicates concept in multiple representations.  Shows evidence of using idea without prompting.  Specific descriptors:   1. Student has modeled through precise use of drawings/objects. 2. Student has modeled through multiple accurate equations. 3. Student has written/drawn a story that accurately depicts the given situation. |  |
| **On Target**  Understands or is developing well.  Uses designated models.  Specific descriptors:   1. Student has modeled through use of drawings/objects with few errors. 2. Student has modeled through multiple equations with few errors. 3. Student has written/drawn a story that depicts the given situation with few errors. |  |
| **Not There Yet**  Some confusion or misunderstands.  Only models idea with help.  Specific descriptors:   1. Student has modeled through use of drawings/objects with significant errors. 2. Student has modeled through equations with errors. 3. Student has written/drawn a story for the given situation with errors. |  |